Improving Enrollment in Dual Credit Program for Career and Technology Education: Lessons Learned from HVAC/R Program

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Paper presented at the annual meeting of the Southwest Educational Research Association,

San Antonio, February 4, 2015

Abstract

Public perception, by students, parents, and school officials, about working in the skilled trades may be creating a barrier to students' enrollment in the dual credit Career and Technology Education Programs, which provide a critical first step for high school students interested in pursuing these career fields. With this qualitative case study, the researcher examined the perceptions and concerns of high school students and school personnel toward the Heating, Ventilation, Air Conditioning, and Refrigeration (HVAC/R) Program and how these perceptions could impede the recruitment and enrollment process at a small community college in Texas, and possibly other institutions, in the future.

Key words: Enrollment, dual credit, career and technology education

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With a significant gap between the skills of the workforce and needs of the workplace as well as the projected growth in the skilled trades occupations, career and technology education has become an increasingly prominent topic among educators, public policymakers, and public school students (Zinth, 2013). While high school students are faced with many life-changing decisions, they are simultaneously bombarded with the current statistics of those who, just a few years ago, stood where they are now standing, making these same decisions about what to do after high school. According to the Bureau of Labor Statistics (2013), current unemployment rates of young people with high school diplomas or some college education range from 6% to 8%. Unfortunately, many college graduates, up to 36%, are considered underemployed or "mal-employed," working in part-time positions or positions that do not require a college degree at all or require technique skills and competence similar to those offered by career and technology education programs (Luhby, 2013).

One of the many options available to high school students is dual credit career and technology education coursework, which allows students to earn high school and college credit simultaneously for successfully completing the high-skilled career and technology preparation program of study. To accommodate the growing need in career and technology education, Congress revised, reauthorized, and renamed the Carl D. Perkins Career and Technology Education Act of 2006, which was originally enacted in 1984, to develop the academic, career, and technical skills of secondary and post-secondary students through challenging and rigorous training programs that included partnerships among secondary schools, post-secondary institutions, and local businesses and industries while authorizing funding for the these programs (S. Res. 250, 2006; Zinth, 2013).

As a result, state policymakers have demonstrated an increased interest in career and technology education programs, particularly dual credit programs (Karp & Hughes, 2008; Zinth, 2013). Texas has now introduced a program under House Bill 5, which has created an endorsement requirement beginning with the 2014-2015 school year (Texas Education Agency, 2013). According to the Texas Education Agency's overview of the endorsement component of House Bill 5, the Business and Industry Endorsement would include courses directly related to heating, ventilation, air conditioning, and refrigeration (HVAC/R).

The current study explored the perceptions, attitudes, and concerns of students, counselors, and other school officials related specifically to the dual credit HVAC/R Program within the context of the career and technology education courses. While other dual credit career and technology education courses have experienced successful enrollment at County Community College [pseudonym], the HVAC/R Program, since its inception two years ago, has had few high school students enroll and no students complete a course in the program of study. Therefore, in this study, I had three overarching research questions.

1. How do high school students perceive the HVAC/R profession as a whole?

2. How do students perceive the career and technology education program in general and, specifically, the County Community College HVAC/R Program?

3. How does the recruitment process for the dual credit program, which involves high school counselors and school administrators as well as college administrators, impact the number of students who enroll in classes and ultimately remain in the HVAC/R Program?

Literature Review

Searches for studies related to student perceptions of a dual credit program for career and technology courses yielded few results. However, the literature search yielded several survey

studies on students' perceptions of skilled trades careers. For example, Hall (2009) reported that when HVAC/R students at Ferris State University were asked in a survey why it was difficult to get young people interested in an HVAC/R career, 26% perceived that there was a lack of publicity for the profession, 18% perceived there to be misconception or ignorance about the profession, and 3% thought the profession was "looked down on" (p. 34). Another survey, reported by Stoner, Bird, and Gaal (2011) declared "social stigma" was "one of the barriers blocking our youth from entering the skilled labor market" (p. 28). These surveys suggest that student perceptions could impact their enrollment in an HVAC/R Program. The existing literature is limited to the current HVAC/R programs that are prevalent in community colleges and universities. The dual credit program at County Community College offers HVAC/R courses to high school juniors and seniors; therefore, this study highlighted the perceptions of high school students and school personnel and could contribute to the body of literature.

Few studies have actually focused exclusively on the HVAC/R program. However, Stoner, Bird, and Gaal (2011) reported a 2010 Manpower study which identified the negative public perception of working in the skilled trades as potentially creating a barrier for high school students considering enrollment in trades programs. Though the Manpower study did not address HVAC/R specifically, it addressed the attitude toward all skilled trades by arguing that educating the public about financial security, advancement potential, and job mobility with a final recommendation to "… push through the major barriers of social stigma by revolutionizing the apprentice's learning experience" (Stoner, Bird, & Gaal, 2011, p. 31). In a survey of university HVAC students, the majority agreed with one student who stated, "If people were more informed about the industry and what can be done within it, people would be more encouraged to check it out" (Hall, 2009, p. 34). In addition, Hall (2008) found high school

guidance counselors and other school officials responsible for the recruitment into HVAC/R dual credit programs maintain stereotypes about the profession or have misinformation about the profession. A study on dual enrollment by Karp and Hughes (2008) produced similar findings and concluded that "new relationships between dual enrollment coordinators and high school CTE teachers should be developed and those in charge of recruiting students into dual enrollment programs should seek ways to target CTE students for program participation" (p. 17). These studies together suggest that public perceptions of the HVAC/R profession could be problematic for recruitment of students into the dual credit program.

My search for and review of the literature on counselors' impact on the decision-making of students yielded the following results. Dave Siravo, Director of Skilled Trades and Apprenticeship Training at Owens Community College in Toledo, Ohio, summed up the frustration of many in the industry, "Twenty to 30 years ago the skilled trades were looked up to as a great way to make a living. . . . Somewhere along the line the skilled trades became less desirable" (Hall, 2008, p. 30). After hearing a counselor advise students that "they were too smart" for HVAC/R, he invited the counselors to the class to demonstrate that it was "not for dummies" (Hall, 2008, p. 30). Rosenbaum and Person (2003) also found that guidance counselors often gave little or no career advice to high school students. The authors strongly recommended that school personnel present to students the various options, their requirements, procedures, and likely outcomes. Rosenbaum and Person (2003) conclude that school counselors are in a unique position to support the decision-making process of high school students.

Existing literature, while thorough in its validation of the benefits of career and technology education, maintains a significant gap related to specific skilled trades programs. I conducted my study with a focus on the perceptions, attitudes, and concerns of the students and

school personnel associated with the dual credit HVAC/R Program in an attempt to discover potential barriers to enrollment and potentially contribute to the literature, filling the current gap.

Methodology

Qualitative case study research methods best represented my study because I was interested in examining the beliefs and attitudes of the students and school personnel involved rather than testing a hypothesis. This study qualified as a case study because it involved a bounded, or limited, system of a selected number of students and school personnel associated with the dual credit career and technology program at a small community college in Texas (Merriam, 1998). There were a limited number of students and school personnel who would be able to respond as participants in this study. Qualitative case studies are particularly useful in evaluating education processes and make use of the participants' own words, experiences, and understandings through the researcher's interviews and observations (Merriam, 1998).

Contexts and Participant Sampling

This study was conducted at County Community College, which has a grant-funded program for Heating, Ventilation, Air Conditioning, and Refrigeration (HVAC/R) offered as continuing education, an academic program, and as dual credit to local high school students. Successful completion of the program prepares students for the Texas State Air Conditioning and Refrigeration licenses as well as for working in the HVAC/R trade.

The participants for this study included students and adults associated with the dual credit program. The purposive sampling, as defined by Erlandson, Harris, Skipper, and Allen (1993) consisted of two students, three high school personnel, and two college personnel. The student participants were associated with the dual credit programs at County Community College (CCC). One student was enrolled in a dual credit course but not in HVAC/R. He had knowledge of the

dual credit recruitment process, dual credit programs, and perceptions of the programs offered by County Community College. Another student was enrolled in HVAC/R but not as dual credit. As a recent high school graduate, he had knowledge of the perceptions of the HVAC/R career field generally and of County Community College programs specifically.

The adult participants included one high school counselor from a large local school district, one high school counselor from a small rural school district, and a private school administrator, all of whom were responsible for advising students and serve schools that fed into the dual credit programs at the college. In addition, the HVAC/R instructor and the Career and Technology Education Liaison were interviewed to gain insight about the actual recruitment process for the dual credit HVAC/R Program at the college.

Data Sources and Collection

Data sources included interviews with each of the student and adult participants, observations of the HVAC/R classes, observations of recruitment activities, review of pertinent documents and records, and my reflective journals. The interviews were conducted face-to-face on the campus of each participant and followed an interview protocol. Observations of students in the HVAC/R classroom and lab settings allowed me to document what students actually learn in the HVAC/R courses. These observations allowed me to compare actual learning activities such as welding, electricity, as well as refrigeration, to the perceptions held by school personnel and the student participant not in the program. I attended a dual credit presentation by a college representative at a local rural school to observe first-hand the information provided on dual credit programs.

For this study, I gathered statistical reports on the dual credit and continuing education programs from CCC for the last two years, during the time of HVAC/R Program. I looked for

trends in enrollment, number of students in each program, and any other trends that might surface through data analysis. In addition, I reviewed minutes from the Dual Credit Committee meetings, minutes from the HVAC/R Advisory Board meetings, and Achievement Plan advising documents from a large local high school and a small rural high school. These data represented the procedures for recruitment process at the high school and at the college, whether current or those being discussed as potential changes.

Limitations

This case study explored the perceptions of only two students. To fully understand students' perceptions toward the HVAC/R profession and the HVAC/R Program at County Community College, more students would need to be interviewed and further research would need to be explored. Interviewing a larger number of students from a wider range of experiences would give a broader picture of student perceptions. In addition, this study was conducted during the second year of the dual credit HVAC/R Program at County Community College. After allowing the program to grow and develop, another study should be conducted for the purpose of recruitment program evaluation.

Findings

Reporting on the Data

After completing the analysis, three major themes emerged from the data in this study. First, there was misinformation about the HVAC/R profession. Second, there were some misperceptions by school personnel about the students' perceptions toward the HVAC/R profession. Finally, there are missed opportunities in the presentation of the HVAC/R Program to area high schools.

Misinformation about the HVAC/R Profession

The misinformation about the HVAC/R profession was apparent in the interviews with school officials and students. According to the school personnel interviewed, HVAC/R is perceived as a skilled trade that does not necessarily lead to a higher level of education in the field. For example, Mr. Caldwell [pseudonym], the principal at a small private school located near County Community College, indicated that it was a mistake to assume that every student needed a four-year degree. He clarified, "HVAC doesn't fit that mold; cosmetology doesn't fit that mold" (Interview, 2/17/2014, p. 6). He continued with a more detailed explanation, "Nursing does because you can go on to get a BSN, MSN, and even a doctorate" (Interview, 2/17/2014, p. 6). Ms. Dunn [pseudonym], a guidance counselor at the large local high school, also made a distinction between students bound for careers in skilled trades and students bound for college. While she was aware of the basic refrigeration coursework provided in the program, she was not aware of the specialized training, such as electricity and welding, that could also prepare students for specialized training, college degrees in HVAC or engineering, or other careers (Interview, 2/26/2014). While school personnel were aware of the HVAC/R Program at County Community College, they did not necessarily have all of the information that could potentially benefit the students in their respective schools. As personnel who guide and influence students in course selection as well as the college and career decision-making, any misinformation they may have can adversely impact the recruitment and enrollment into the HVAC/R Program.

The student participants also maintained misinformation about the profession. Though both participants understood that the HVAC/R Program would prepare students to become certified HVAC/R technicians, knowledge of other educational opportunities was lacking. Erik

[pseudonym], a recent high school graduate who participated in dual credit computer courses at County Community College, summarized his own understanding as well as what he believed most students his age also thought. Erik stated, "We know it's a good career choice, especially with the labor market right now. . . . I had no idea that you could earn an associate's or bachelor's degree in HVAC. I don't think that is common knowledge" (Interview, 4/14/2014, p. 3). Michael [pseudonym], a recent high school graduate currently enrolled in the HVAC/R program, concurred, stating that HVAC/R offered a profession with great job security though he was unaware of educational opportunities beyond the certifications in his current program (Interview, 4/8/2014). Mr. Caldwell also understood the salary potential, stating, "Trust me, in HVAC, they are making good money. I just replaced a unit here at the school . . . they are making good money" (Interview, 2/17/2014, p. 6)!

Misconceptions about Students' Perceptions

The second theme that emerged was somewhat surprising. There were some misperceptions, in general, by the school personnel about the students' perceptions of the HVAC/R profession. Ms. Dunn believes that while there is a labor market for HVAC, she is not certain there is an interest on the part of students (Interview, 4/26/2014, p. 4). She offers a possible reason, stating, "In cosmetology, you see the hair, make-up, and nails. In auto tech, you see the cars you've fixed. Kids don't realize they are providing comfort [in HVAC/R]. It's highly skilled, but . . . Kids want to be seen" (Interview, 4/26/2014, p. 4-5). Their interests are sparked and perpetuated by the media exposure of fashion shows, automotive programs, and even culinary segments on television, she continued (Interview, 4/26/2014). Even the HVAC/R professionals recognized the need to put a face on the industry. At a County Community College HVAC/R Advisory Board committee meeting, industry professionals discussed the recruitment

dilemma and specifically made the analogy that there is no "superhero" for HVAC/R (Advisory Board minutes, 10/10/2013). Mrs. Jones [pseudonym], the Career and Technology Education Liaison at County Community College, indicated that the HVAC/R Program was not actively promoted as a dual credit class though the course catalogue does identify it as such (Interview, 2/14/2014). This approach was utilized because it was perceived that it would be too overwhelming for the students interested in the technical courses (Interview, 2/14/2014). When presenting to the HVAC/R Advisory Board, Mrs. Jones shared that while some dual credit skilled trades courses such as Auto Tech and Welding were at capacity, some were not, including HVAC/R, which had no dual credit participants this year, adding the caveat that "we're dealing with teenagers, and they don't know what they want" (Advisory Board minutes, 10/10/2013, p. 1). The adults responsible for recruiting into the HVAC/R Program perceived that high school students who might be suited for career and technology education courses such as HVAC/R lacked long-term academic goals and needed to be enticed into the industry with flashy images.

The student participants, however, had a different view of the HVAC/R profession and its potential. Michael, who graduated last year from a high school that did not participate in the dual credit program with County Community College, indicated that while some of his classmates were not interested in a profession that required working in the heat and the cold, most were aware of and impressed with the job security the profession had to offer (Interview, 4/8/2014). Though student participant Erik was not interested in pursuing HVAC/R himself, he had classmates who were interested because they had family members in the business (Interview, 4/14/2014). In fact, he stated his classmates saw the skilled trades as a means to "make good money, pursue good job opportunities, and have a foothold in the world" (Interview, 4/14/2014, p. 3). Erik did, however, demonstrate an interest in both academic and technical dual credit

courses. He took one academic dual credit course and one career and technical dual credit course and confirmed that he knew his history class was classified as dual credit while he was not aware that his computer class was dual credit until he actually attended the class (Interview, 4/14/2014). He would have enjoyed taking more dual credit career and technology classes though he had not yet decided which career field he was going to pursue (Interview, 4/14/2014). These two students both indicated a desire to choose a career with a secure future. These students, though they may not represent the opinions of all high school students, certainly understood the value of pursuing a career with a secure future. Both were seeking career opportunities after high school that afforded them job security and a good salary. Neither of these students held negative perceptions of skilled trades, the HVAC/R profession, or the County Community College dual credit program.

Missed Opportunities in the Presentation of HVAC/R Program

The final theme that emerged was not unexpected. Based on interviews, observations, and review of documents, missed opportunities in the presentation of the HVAC/R Program to area high schools were apparent. One missed opportunity was simply getting the information about the availability of dual credit career and technology programs, such as HVAC/R, to schools other than the two large local high schools that the community college serves. Miss Messenger [pseudonym], a counselor at a small rural high school not far from County Community College, shared her concerns about the career and technology education courses, such as HVAC/R, offered at the college. "Honestly, I didn't know it [HVAC/R] was available in this area. I knew it was available in bigger cities, but I didn't know it was available to us" (Interview, 2/21/2014, p. 2). While Mr. Caldwell's private school students participated in several academic dual credit courses at the community college, they had not been advised of the

career and technical education courses that could benefit the students (Interview, 2/17/2014). He elaborated, stating, "Most of our students are college bound – about 85 to 90%. For the other 10 to 15%, we need to explore what they want to do. . . . I wouldn't object to recommending those [HVAC/R] courses" (Interview, 2/17/2014, p. 5).

The HVAC/R Instructor Mr. Richardson [pseudonym] indicated that he had set up an information booth, including working models of equipment, brochures, and pictures of the lab, about the HVAC/R Program at both large high schools in town, which generated interest with a number of students (Interview, 2/21/2014). However, he had not shared this same type of presentation with other schools in the area (Interview, 2/21/2/14). As previously stated, Mrs. Jones, the Career and Technology Education Liaison at County Community College, indicated that the HVAC/R Program was not actively promoted as a dual credit class though the course catalogue does identify it as such (Interview, 2/14/2014). If students selected this course, or any other career and technology course, they would learn of the dual credit status when they arrived for the classes (Interview, 2/14/2014). If students are interested in dual credit courses for the purpose of gaining college credits, making them aware of the HVAC/R courses' status as dual credit could also increase enrollment. If County Community College is to increase the recruitment and enrollment in the HVAC/R Program, an increase in awareness of the program in all schools in the area would be necessary.

Apparently, County Community College administrators have begun to recognize the need to be more inclusive in the recruitment for dual credit career and technology education courses as they have recently established a Dual Credit Recruitment Committee. According to Dual Credit Recruitment Committee action items, County Community College will be communicating with more with small rural schools, private schools, and home school associations to improve

enrollment (Dual Credit Recruitment Committee minutes, 12/2/2013). County Community College offers academic dual credit to many small school districts through the Internet with online instruction or through live interactive television systems with face-to-face instruction. The Dual Credit Coordinator visits these campuses to inform parents and students about the programs available. However, these presentations illustrate another example of missed opportunity. At a small rural school, the County Community College Dual Credit Coordinator presented information about the Dual Credit Program to parents and students, some of whom were already participating in academic dual credit courses (Observation, 3/18/2014). The presentation included topics such as benefits of dual credit courses, costs of college courses, applying for financial aid, eligibility for dual credit, tips for success, and other important topics (Observation, 3/18/2014). While the handouts identified the career and technology education dual credit courses, the presentation did not include any discussion of those courses (Observation, 3/18/2014). Through the Dual Credit Recruitment Committee, action items were established to include dual credit career and technology education courses in social media sites, websites, and presentations to other organizations to improve awareness and potentially recruitment (Dual Credit Recruitment Committee minutes, 12/2/2013). While some steps are being taken to improve the recruitment into career and technology education courses, there are missed opportunities for highlighting the HVAC/R Program at Howard. Increasing the number of contacts, increasing the personal presentations on HVAC/R, and increasing the inclusion of HVAC/R and other CTE programs in all dual credit program presentations would improve the awareness of the programs offered by County Community College.

Discussion

The primary goal of this study was to explore the perceptions, attitudes, and concerns of the students and school personnel associated with the dual credit HVAC/R Program in an attempt to discover potential barriers to enrollment. During the interviews with the two student participants in this study, they both shared that they and their friends perceived skilled trades professions, including HVAC/R, as a viable option as a career because it offered job security and a good salary. It was unclear if the opinions or perceptions they expressed represented a small minority or a much larger number of students. It is clear, however, that at least some students understood the value of pursuing a profession, such as HVAC/R, that has much to offer.

The misinformation held by school personnel could significantly influence the enrollment in the HVAC/R Program. The school counselors and administrators who participated had misinformation about the HVAC/R profession and the community college program, which could ultimately impact the advice they give students. Those who are in a position to advise students about college and career choices, whether representatives of the college or high school personnel, can influence their decision-making process (Francis & Prosser, 2013; Rosenbaum & Person, 2003). Having accurate and thorough information is critical. As the students in the Ferris State University survey indicated, there is at least some "ignorance about the profession" (Hall, 2009, p. 34).

At a time when the millennial generation is characterized by its self-centered attitude, it is not surprising that school personnel and industry professionals would identify students' perceptions about the HVAC/R profession as less than positive. The local school personnel and the community college personnel seemed to agree that students would be seeking a more glamorous profession. While the two student participants might not represent the majority of

student opinions, they did have positive opinions about the profession and making plans for their future in the skilled trades (Erik, Interview, 4/14/2014; Michael, Interview, 4/8/2014). The student participants' perceptions, which contradicted the opinions of the school personnel and the industry professionals, also conflicted with the literature. When the Ferris State University survey of HVAC/R majors asked why it was so difficult to get young people interested in an HVAC/R career, 15% of the respondents indicated that the work was "too hard" while 9% responded that the profession was "not sexy" or "popular" (Hall, 2009, p. 34). The two students' perceptions did not support the idea of a negative "social stigma" as a barrier to entering the skilled trades workforce (Stoner, Bird, & Gaal, 2011, p. 28).

Finally, the most concrete finding in the study is that there were missed opportunities in promoting the dual credit HVAC/R Programs. Data gathered from interviews and observations indicate that CTE courses, including HVAC/R, were not actively and aggressively promoted. These missed opportunities could account for the lack of enrollment in the dual credit HVAC/R Program. County Community College has already begun to take steps toward rectifying the lack of contact with private schools, small local school districts, and home school associations. This finding seems to have confirmed the results of the Ferris State University survey taken from HVAC/R majors, in which 26% believed it was primarily due to a "lack of advertising/publicity" that young people were not interested in the profession (Hall, 2009, p. 34).

Conclusion and Implications

The current study explored the perceptions, attitudes, and concerns of students, counselors, and other school officials related specifically to the dual credit HVAC/R Program within the context of the career and technology education courses as raised by County Community College administration as well as by the literature in relation to the perceptions of

the HVAC/R profession. For the counselors and school personnel who are charged with advising students for dual credit opportunities, this study has provided some insight into what the HVAC/R Program at County Community College could offer. The HVAC/R Program provides a pathway to certifications and careers, but HVAC/R can lead to educational opportunities beyond certifications. Although study participants were unaware, HVAC/R students could pursue Associate's and Bachelor's degrees in HVAC/R, pre-engineering, or other fields. Providing additional information about the profession to local school personnel could eliminate any misconceptions or misinformation about the HVAC/R career field. For County Community College administrators responsible for the implementation of the recruitment of dual credit students, this study more importantly has provided some insight into what are and are not the potential barriers to recruitment and enrollment. Though the two student participants' perceptions may not represent the opinions of all high school students, they indicate that not all students perceive the HVAC/R profession in a negative way. Implementation of a revised recruitment plan which includes presentations to more small schools, home school associations, and private schools as well as inclusion of career and technology education information in the dual credit presentations throughout the district could significantly increase the enrollment into the HVAC/R Program, which was the original goal of the study.

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